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DEPARTMENTS.

NOTE. All solutions of problems, problems for solution, and other department contributions should be sent direct to THE AMERICAN MATHEMATICAL MONTHLY, 1227 Clay Street, Springfield, Mo.

SOLUTIONS OF PROBLEMS.

The following problem was received too late for publication: Miscellaneous No. 150, solved by L. E. Newcomb.

ALGEBRA.

243. Proposed by PROFESSOR WILLIAM HOOVER, Ph. D., Athens, Ohio.

Find the infinite root of $\frac{1}{x} + \frac{1}{a} = \sqrt{\left[\frac{1}{a^2} - \sqrt{\frac{1}{a^2 x^2} + \frac{1}{x^4}} \right]}$.

Solution by ELMER SCHUYLER, A. B., Brooklyn, New York.

Squaring the sides and reducing we have,

$$\frac{1}{x^2} + \frac{2}{ax} = - \sqrt{\frac{1}{a^2 x^2} + \frac{1}{x^4}}.$$

Whence $1/x=0$, or $x=\infty$. Also,

$$\frac{1}{x} + \frac{2}{a} = - \sqrt{\frac{1}{a^2} + \frac{1}{x^2}}.$$

Squaring this and reducing, we get

$$\frac{1}{x} = - \frac{3}{4a}, \text{ or } x = - \frac{4a}{3}.$$

Since $\frac{1}{x^2}$ cancelled out on each side of the equation, $\frac{1}{x}=0$, or $x=\infty$. The only value of x satisfying the original equation, the radicals being taken with positive signs, is $x=\infty$.

Also solved by B. F. Finkel, G. W. Greenwood, J. E. Sanders, G. B. M. Zerr, and the Proposer.

AVERAGE AND PROBABILITY.

168. Proposed by J. SCHEFFER, A. M., Hagerstown, Md.

Find the average area of a triangle two of whose sides have the constant sum $2a$.